IN THE CLAIMS:

WHAT IS CLAIMED IS:

Claim 1. (Cancelled)

2. (Currently Amended) The apparatus of claim ~~1~~ 36 wherein the radiant energy source is a solid state device that is cycled on and off in order to deliver the desired radiant energy delta.

3. (Currently Amended) The apparatus of claim ~~1~~ 36 further comprising a temperature sensor for signaling the temperature of the radiant source to the processor.

4. (Currently Amended) The apparatus of claim ~~1~~ 36 wherein the radiant energy source is mounted upon a heat sink and the apparatus further comprises a temperature sensor for signaling the temperature of the heat sink to the processor.

5. (Currently Amended) The apparatus of claim ~~1~~ 36 further comprising a radiant energy source driver board that communicates with the processor to provide the appropriate level of power to the radiant energy source.

6. (Currently Amended) The apparatus of claim ~~1~~ 36 wherein the processor outputs electrical pulses to indicate to the hot box detector when the energy delta is increasing from a reference value to a peak value and when the delta is decreasing again to its reference value.

7. (Currently Amended) Apparatus for calibrating a railway infrared hot box detector by delivering a desired radiant energy delta to the hot box detector comprising: a solid state radiant energy source for emitting radiant energy along a path toward the hot box detector adapted to be positioned adjacent to the hot box detector being

calibrated; a shutter device positioned between the source of radiant energy and the hot box detector along the path, with the shutter device being selectively operable between a first mode operation in which the shutter device permits radiant energy to be transmitted from the source to the hot box detector along the path, and a second mode of operation in which the shutter blocks the transmission of radiant energy from the source to the detector; a processor for operating the energy source at a desired temperature setpoint, and wherein the processor is further configured to control at least one of the following: the frequency of cycling of shutter operation between the first and second modes to achieve the desired radiant energy delta, and the relative durations of the first and second modes of shutter operation to achieve the desired radiant energy delta.

8. (Original) The apparatus of claim 7 further comprising a temperature sensor for sensing a temperature of the shutter device and communicating the sensed temperature to the processor, the processor using the sensed temperature to calculate the desired temperature setpoint.

9. (Original) The apparatus of claim 8 further comprising a second temperature sensor for sensing a temperature of the energy source.

10. (Original) The apparatus of claim 7 wherein the shutter device is a wheel having an aperture therein and comprises a motor for rotating the wheel.

11. (Original) The apparatus of claim 10 wherein the motor is controlled by the processor.

12. (Currently Amended) The apparatus of claim 7 wherein a heat shield defining an aperture is mounted along the path and radiant energy is transmitted directly from the source to the hot box detector via the aperture of the heat shield and the shutter device when in its first mode of operation.

13. (Original) The apparatus of claim 7 wherein the processor outputs electrical pulses to indicate to the hot box detector when the energy delta is increasing from its reference value to its peak value and when it is decreasing again to its reference value.

14. (Original) The apparatus of claim 7 further comprising a lens placed between the hot box detector and the radiant energy source for diffusing the radiant energy from the radiant energy source.

Claims 15 - 22. (Cancelled)

23. (Currently Amended) ~~The method of claim 22 further comprising~~ A method of calibrating a railway infrared hot box detector by delivering a controlled level of radiant energy to the detector, the method comprising: transmitting radiant energy from a radiant energy source when at a high temperature to the hot box detector for a first period of time; transmitting radiant energy from the radiant energy source when not at a high temperature to the hot box detector for a second period of time; controlling the operation of the radiant energy source so as to emit radiant energy at a desired level in excess of that of the radiant energy transmitted during the second period of time to achieve a desired radiant energy delta for calibrating the hot box detector; sensing a parameter indicative of the temperature of the radiant energy source during the second period of time and, based on said sensed parameter, controlling the temperature of the radiant energy source to ~~emit~~ achieve the desired radiant energy delta ~~during the first period of time~~.

24. (Currently Amended) ~~The method of claim 22~~ A method of calibrating a railway infrared hot box detector by delivering a controlled level of radiant energy to the detector, the method comprising: transmitting radiant energy from a radiant energy source when at a high temperature to the hot box detector for a first period of time; transmitting radiant energy from the radiant energy source when not at a high

temperature to the hot box detector for a second period of time; controlling the operation of the radiant energy source so as to emit radiant energy at a desired level in excess of that of the radiant energy transmitted during the second period of time to achieve a desired radiant energy delta for calibrating the hot box detector, wherein the radiant energy source is an electrical device and the method further comprises controlling transmission of electrical power to the radiant energy source to achieve the desired radiant energy delta.

25. (Currently Amended) ~~The method of claim 22 further comprising~~ A method of calibrating a railway infrared hot box detector by delivering a controlled level of radiant energy to the detector, the method comprising: transmitting radiant energy from a radiant energy source when at a high temperature to the hot box detector for a first period of time; transmitting radiant energy from the radiant energy source when not at a high temperature to the hot box detector for a second period of time; controlling the operation of the radiant energy source so as to emit radiant energy at a desired level in excess of that of the radiant energy transmitted during the second period of time to achieve a desired radiant energy delta for calibrating the hot box detector; and controlling the frequency of cycling between the first and second periods of time to achieve the desired radiant energy delta.

26. (Currently Amended) ~~The method of claim 22 further comprising~~ A method of calibrating a railway infrared hot box detector by delivering a controlled level of radiant energy to the detector, the method comprising: transmitting radiant energy from a radiant energy source when at a high temperature to the hot box detector for a first period of time; transmitting radiant energy from the radiant energy source when not at a high temperature to the hot box detector for a second period of time; controlling the operation of the radiant energy source so as to emit radiant energy at a desired level in excess of that of the radiant energy transmitted during the second period of time to achieve a desired radiant energy delta for calibrating the hot box detector; and controlling the relative durations of the first and second periods of time to achieve the

desired radiant energy delta.

27. (Currently Amended) ~~The method of claim 22~~ A method of calibrating a railway infrared hot box detector by delivering a controlled level of radiant energy to the detector, the method comprising: transmitting radiant energy from a radiant energy source when at a high temperature to the hot box detector for a first period of time; transmitting radiant energy from the radiant energy source when not at a high temperature to the hot box detector for a second period of time; controlling the operation of the radiant energy source so as to emit radiant energy at a desired level in excess of that of the radiant energy transmitted during the second period of time to achieve a desired radiant energy delta for calibrating the hot box detector, wherein the radiant energy source is mounted on a heat sink and the method further comprises sensing the temperature of the heat sink during the second period of time.

28. (Currently Amended) The method of claim ~~22~~ 24 further comprising transmitting data to the hot box detector indicative of a time period when the radiant energy delta is increasing from a reference value to a peak value and a time period when the delta is decreasing to its reference value.

Claim 29. (Cancelled)

30. (Currently Amended) The apparatus of claim ~~29~~ 35 wherein the radiant energy source is a solid state device and in the first mode utilizes electrical power for heating the device.

31. (Currently Amended) The apparatus of claim ~~29~~ 35 further comprising a temperature sensor for generating data indicative of the temperature of the radiant source to be transmitted to the processor.

32. (Currently Amended) The apparatus of claim ~~29~~ 35 wherein the radiant energy source is mounted upon a heat sink and the apparatus further comprises a temperature sensor for signaling the temperature of the heat sink to the processor.

33. (Currently Amended) The apparatus of claim ~~29~~ 35 further comprising a radiant energy source driver board that communicates with the processor to provide the appropriate level of power to the radiant energy source.

34. (Currently Amended) The apparatus of claim ~~29~~ 35 wherein the processor outputs data to indicate to the hot box detector the time period when the radiant energy delta from the source is increasing from a reference value to a peak value and the time period when the radiant energy delta is decreasing from its peak value to its reference value.

35. (Currently Amended) ~~The apparatus of claim 29~~ Apparatus for calibrating a railway infrared hot box detector by delivering a desired radiant energy delta to the hot box detector comprising: a radiant energy source for generating radiant energy along a path toward the hot box detector adapted to be positioned adjacent to a hot box detector to be calibrated; the radiant energy source being selectively operable between a first mode and a second mode, in the first mode the energy source is heated to a relatively high temperature and generates a high level of radiant energy for transmission to the hot box detector, and in a second mode the energy source is not heated to the relatively high temperature and generates a low level of radiant energy; and a processor for controlling the operation of the radiant energy source so as to generate a desired radiant energy delta between said first and second modes of the radiant energy source for calibrating the hot box detector, wherein the processor controls power delivered to the radiant energy source in its first mode so as to achieve the desired radiant energy delta.

36. (Currently Amended) ~~The apparatus of claim 1~~ Apparatus for calibrating a railway infrared hot box detector by delivering a desired radiant energy delta to the hot box detector comprising: a radiant energy source adapted to be positioned adjacent to the hot box detector being calibrated for emitting radiant energy along a path toward the hot box detector; a lens located between the hot box detector and the radiant energy source for diffusing the radiant energy from the radiant energy source; and a processor for operating the energy source to achieve the desired radiant energy delta, wherein the processor controls the frequency of cycling the operation of the radiant energy source between the first and second modes to achieve the desired radiant energy delta.

37. (Currently Amended) ~~The apparatus of claim 1~~ Apparatus for calibrating a railway infrared hot box detector by delivering a desired radiant energy delta to the hot box detector comprising: a radiant energy source adapted to be positioned adjacent to the hot box detector being calibrated for emitting radiant energy along a path toward the hot box detector; a lens located between the hot box detector and the radiant energy source for diffusing the radiant energy from the radiant energy source; and a processor for operating the energy source to achieve the desired radiant energy delta, wherein the processor controls the relative durations of the first and second modes to achieve the desired radiant energy delta.

Claim 38. (Cancelled)